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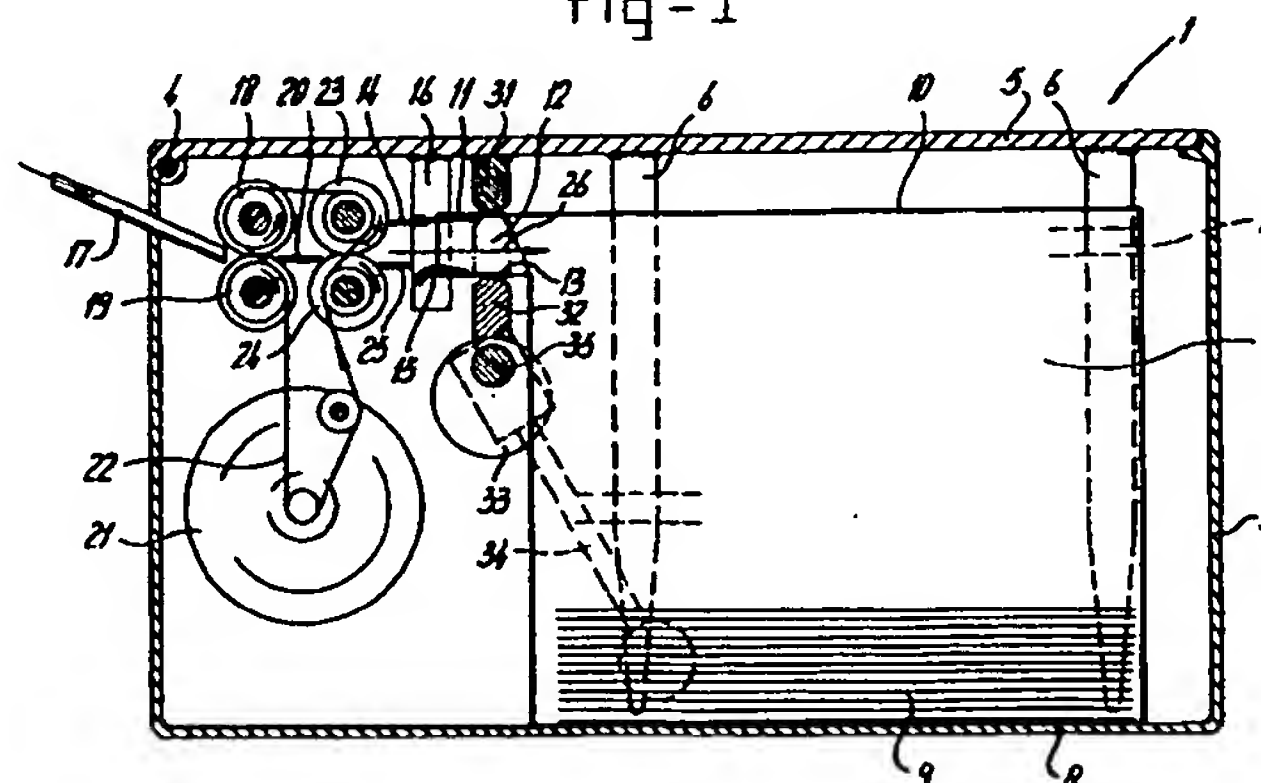
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(54) **Assembly for storing paper money in a container, as well as container and housing for a container of this kind**

(57) The invention relates to an assembly for storing paper money in a container. The assembly comprises a container (2) and a housing (1) in which the container (2) can be removably accommodated, the housing is provided with insertion means (17) for inserting paper money into the housing, and the insertion means open out onto inlet means (12), via which paper money can be introduced into the said container (2). The container is an essentially closed bag. The inlet means comprise an inlet slot (12) formed in the said bag and the bag is provided, in the region of the inlet slot, with a sealable

plastic, in such a manner that the bag can be closed by sealing. Preferably, the housing (1) itself is provided with sealing means (31,32) for sealing the inlet slot (12) of the bag. Furthermore, the housing is preferably provided with a flap (5) for replacing the bag, which flap can be locked by means of locking means (16,36,37,39), which are actively connected to the means for actuating the heat-sealing (33-35) in such a manner that the flap can only be opened after the bag has been sealed.

Fig-1



## Description

The present invention relates to an assembly for storing paper money in a container, the assembly comprising a container and a housing in which the container can be removably accommodated, the housing being provided with insertion means for inserting paper money into the housing, and the insertion means opening out onto inlet means, via which the paper money can be introduced into the said container which can be removably accommodated in the housing.

An assembly of this kind is known per se, for example from GB-A-2,236,143 and from PCT/NL94/00023. In the assemblies known from these documents, there is a housing with a removable container, in the form of a steel box. Paper money can be stored in the steel box via the housing and with the aid of insertion means which are arranged therein and open out onto the inlet of the steel box. Assemblies of this kind are also referred to as cash-removal boxes or security cases.

Cash-removal boxes or security cases are widely used in the retail trade, and are sometimes integrated in the cash desk. The person operating the till can then safely store banknotes and cheques in the cash-removal box/security case after they have been received as payment. Security cases or cash-removal boxes are useful, inter alia, as theft-prevention means.

The contents of the cash-removal/security case(s) are ultimately taken to the bank for further processing. The contents of the security/cash-removal case(s) are generally organized and counted first, so that they can be transferred to special bags before being transported to the bank. In order to ensure that paper money transferred in this way arrives at the bank in the same condition as that in which it started its journey, the paper money is generally packaged in so-called "sealbags". These sealbags are only opened at the bank. If the sealbags are found to be damaged on arrival at the bank, this is an indication of possible fraud.

GB-A-2,218,150 discloses a safe for use in a passenger bus, in which safe the driver can store bus tickets and coins received. The tickets/coins are introduced into the safe housing via an insertion system and then fall into a bag which is held open inside the housing via an inlet slot formed in the latter. The inlet slot of the bag is delimited by two plates which are attached to the bag, are arranged movably with respect to one another in the housing and are locked together when they are placed against one another. The lock can then be opened by an authorized person using a key. The bag is made from leather or any other suitable strong material and is essentially L-shaped. If it is closed, it is not possible to see the contents of the bag, and furthermore the bag is relatively heavy and it is not easy to store in particular paper money in this bag in a space-saving, efficient manner. The bag is also intended for bus tickets and coins.

FR-2,523,080 discloses a bag which is made from

sealable plastic and can be used for packaging coins. The bag can be closed by sealing overlapping parts, and the subject-matter of the invention according to FR-2,523,080 is that the sealed seam can be made resistant to fraud by providing it with a specific pattern or a specific text during the sealing operation. The bag which is known from FR-2,523,080 is unsuitable for storing paper money, at least for stacks, in particular relatively large stacks thereof, and in particular for inserting paper money one note at a time.

EP-A-0,033,926 discloses a night safe in which the person making a deposit can deposit items packaged in a closed container. The closed container may be a bag, parts of which may be formed from a heat-sealable material.

The object of the present invention is to provide an improved assembly for storing paper money in a container which can be used in particular to increase the efficiency and resistance to fraud.

This object is achieved according to the invention by the fact that the container is an essentially closed bag, by the fact that the inlet means comprise an inlet slot formed in the bag, and by the fact that the bag is provided, in the region of the inlet slot, with a sealable plastic, in such a manner that the bag can be closed by sealing. A bag of this kind can then be closed before, during or after its removal from the housing, and is then ready to be transported to the bank for further processing there. This means that it is no longer necessary to transfer the money from a box, which is generally made of steel, into a further container, that the unit to be transported to the bank can have a minimum weight, owing to the absence of steel boxes, which have to be transported in some of the systems which are known from the prior art, and that the number of actions which are susceptible to fraud carried out in the retail trade can be minimized. In this case, the bag may consist entirely of a so-called sealable or weldable plastic, but what is important is that in any event the area in the region of the inlet slot which is to be sealed is made from a weldable/sealable plastic.

According to the invention, the housing itself is advantageously provided with sealing means for sealing the inlet slot of the bag. This avoids having to take the bag to a different location after it has been removed from the housing before it can be sealed. This further reduces the possibility of fraud.

According to the invention the risk of fraud is reduced further if the sealing means are arranged in the housing, in the region of the inlet means, and specifically in such a manner that the bag can be sealed in the position in which it is accommodated in the housing. The bag is then sealed before it is removed from the housing, which, as will be clear, further reduces the risk of fraud.

In this case according to the invention the sealing means may advantageously comprise an anvil which is fixed to the housing and a pressure-exerting member

which is movable with respect to the housing and can be pressed against the anvil, in which case the anvil and/or the pressure-exerting member are or is heatable. By clamping the sealable plastic between the anvil and the pressure-exerting member close to the inlet slot of the bag, it is possible to seal the bag.

Fraud is almost completely ruled out according to an embodiment of the assembly according to the invention in which the housing is formed by an essentially closed box, to which access can be gained via a lid in order to replace a bag, it being possible to lock the lid by means of locking means on the box, it being possible to actuate the sealing means from outside the box, which sealing means are actively connected to the locking means in such a manner that a bag accommodated in the box must first be sealed before the lid can be unlocked. A structure of this nature can be achieved in various ways. With the aid of a handle attached to the outside of the housing, the movable pressure-exerting member can be pressed against the anvil, thus activating an electromagnetic coil so as to move a locking pin into its release position. The lid can then be opened, possibly after unlocking a further lock, for example in the form of a combination lock, code lock or key-actuated lock. It is also conceivable to provide an electronic control device which, after actuation of a button or switch from the outside of the housing, first sets the sealing in operation and unlocks the lid only after this sealing operation has been completed, which could be checked by means of sensors, or optionally after a specific time has elapsed (for example 3 to 5 seconds). The button may in this case comprise a switch which can be actuated by means of a key which can be inserted into a lock.

Another possibility for realizing the embodiment according to Claim 5 is to use an (electrical) three-position lock which can be actuated using a key. A lock of this kind has three positions, namely a starting position, in which the housing is kept closed by the lock, an intermediate position, and an unlocked position, in which the housing can be opened in order to exchange the bag. With the aid of a key, the lock can be moved from the starting position into the intermediate position, and in the first instance cannot be rotated further to the unlocked position. In the intermediate position, the sealing means are then activated in such a way as to move the pressure-exerting member towards the anvil and to heat the pressure-exerting member and/or the anvil for the purpose of sealing. When the bag accommodated in the housing has been sealed, which can be ensured using a timer circuit or sensors for this purpose, the lock is released, so that it can be rotated beyond the intermediate position into the unlocked position.

According to a particular embodiment of the assembly, in which the housing comprises a lid, the lid is a drawer which can be slid into and out of the housing, and the bag can be placed on or in the drawer in an exchangeable manner, so that at least when the drawer

has been slid in, the insertion means open out onto the inlet means and so that when the drawer has been slid out, the bag can be removed from the drawer and/or can be placed in the drawer. In this case, the insertion means may be arranged both on the drawer, such that they can be moved together with the drawer, in which case the insertion means, with the bag in position, will generally open out onto the inlet means of the bag, and may also be arranged at, in or on the box, in which case the inlet means of a bag which is arranged in the drawer and can be displaced together with the drawer will in general adjoin the outlet opening of the insertion means only when the drawer has been slid inwards. Thus the insertion means can only be made to open out onto the inlet means by pushing the drawer into the box. A major advantage of the drawer structure is that it makes it possible to improve considerably the access to a bag to be exchanged and the access to the location where a new bag is to be attached, since the bag, which is per se flexible, can then first be placed in the drawer, which is very easily accessible owing to it being slid out and then can be slid into the box, together with the drawer, after which the drawer can be locked to the box, so that it can only be slid back out of the box after the lock has been unlocked and preferably also after the bag has been sealed.

In order easily to be able to accommodate a large quantity of paper money in the bag, preferably in the stacked form, it is advantageous according to the invention if the bag is essentially block-shaped and if the assembly comprises a clamping frame, comprising clamping arms which can be placed in passages formed on preferably the outside of the bag, the passages and clamping arms being designed in such a manner that the bag can be clamped, by inserting the clamping arms through the passages or pushing the passages over the clamping arms. In this case, the clamping frame may be arranged in or on the drawer or may be made separately, so that it can be placed in the drawer together with the bag such that it can be removed.

According to an advantageous embodiment, the clamping frame comprises, in the position in which a bag is clamped to the frame, a base plate which supports the bottom of the said bag on the underside. A base plate of this kind has the considerable advantage that in the position in which a bag is accommodated in the assembly it is ensured that its bottom remains flat without the need to reinforce the bottom of the bag itself for this purpose, which is advantageous with regard to forming a stack of paper money accommodated in the bag and also keeps the weight of the bag itself low and keeps the structure of the bag simple.

According to a further advantageous embodiment of the invention, the assembly comprises a lifting mechanism for the bottom of the bag, which lifting mechanism interacts with the sealing means and is designed in such a manner that it raises the bottom of the bag



when sealing the inlet slot. It is thus possible to ensure that the inlet slot is made, as it were, without stress, thus assisting the sealing. One advantage which can be ensured in this way is that when anvil and pressure-exerting member are moved towards one another the tendency of the inlet slot to slide or slip out from between them is counteracted and preferably prevented altogether, so that the location where the seal is ultimately formed can be defined in a reliable manner. It is particularly advantageous here if a base plate is arranged under the bottom of the bag, since this forms an excellent point for the lifting mechanism to act on. However, the lifting mechanism may also act directly on the bottom of the bag. The lifting mechanism will in particular act on that part of the bottom of the bag which is situated beneath the inlet slot, in which case it is therefore not necessary, to achieve the intended effect, for the entire bottom of the bag to be raised by the lifting mechanism.

In order to assist with forming a neat stack of paper money and/or with accommodating as much paper money as possible in the bag, it is advantageous according to the invention if the assembly is provided with a shaking mechanism which is designed in such a way that, in the position in which the bag is accommodated in the housing, it is able to jolt this bag so as to vibrate it. A vibrating jolting of this nature will cause paper money accommodated in the bag to sink downwards and, if there is a stack of paper money present in the bag, will cause this stack to settle downwards. A shaking mechanism of this kind offers the further possible advantage of improving the neatness and straightness of the stack of paper money present in the bag.

In order to be able to form a stack of paper money in a reliable manner in the bag, it is advantageous according to the invention if the bag is essentially block-shaped, in such a manner that the stack can be accommodated therein, and if the passage plane of the inlet slot extends essentially in the vertical plane, so that the paper money, after having been inserted into the bag in the horizontal orientation, can fall vertically downwards onto the bottom of the bag or the top of the stack of the paper money formed in the bag. In order to be able to accommodate as much paper money as possible in the bag, it is advantageous here if the inlet slot is arranged just below the top of the block-shaped bag.

In order to guarantee access of paper money to the bag at all times, it is advantageous according to the invention if the inlet means furthermore comprise lips which are placed at a distance apart and opposite one another, can be positioned in the inlet slot of the bag and delimit a slot-like passage for paper money. In order to facilitate pressing the inlet slot closed when sealing the bag in the position in which it is accommodated in the housing, it is advantageous according to the invention if at least one of the lips is arranged movably, rotatably or in a resiliently yielding manner with respect to the housing, in such a manner that this lip allows the

inlet slot to be pressed closed when sealing the bag. In order to facilitate sealing of the bag, it is advantageous according to the invention if the bag is provided with a projecting mouthpiece made of a sealable plastic, which delimits the inlet slot. This makes it possible, inter alia, to fill the bag right to the top while ensuring that it can still be sealed at all times. It is in this case particularly advantageous if the mouthpiece extends essentially horizontally.

According to an advantageous embodiment of the invention, essentially the entire bag may be produced from a, preferably transparent, plastic (which is preferably sealable), and the bag, in the position in which it is accommodated in the housing, has an essentially block-like shape with a bottom surface which is dimensioned in such a manner that the paper money can be stored in the bag as a stack extending from the bottom upwards, and the inlet slot is arranged in the vicinity of the top surface, which is parallel to the bottom surface. A block-shaped bag of this kind, with a bottom surface whose dimensions are adapted to the paper money to be accommodated, has the advantage that paper money collected therein remains in its stacked state even after the bag is removed from the housing, because the paper money is surrounded by the vertical walls of the bag. Maintaining the stacked form of the paper money collected in the bag is particularly advantageous for further processing of the collected paper money at the bank.

It will be clear that a number of the preferred embodiments outlined above can also be employed advantageously without the need for a container comprising a bag made of sealable plastic. This container may in this case optionally also be designed differently. With regard to these embodiments, consideration may be given, inter alia, to the drawer structure; the clamping frame, which does not per se have to be used with a bag made of sealable plastic, but could also be used with a bag made of a different type of material; and also the shaking mechanism, which can increase the maximum filling level which can be achieved in any type of container for paper money and also for coins and which, in the case of a stack of paper money, can be used to increase the neatness of this stack. These specific embodiments, which can optionally be employed separately from a bag made of sealable plastic, can also advantageously be used separately from the bag made of sealable plastic in the further aspects of the invention which are to be discussed below.

The invention furthermore relates to an assembly for storing paper money in a container, the assembly comprising a container and a housing in which the container can be removably accommodated, the housing being provided with insertion means for inserting paper money into the housing, and the insertion means opening out onto inlet means, via which the paper money can be introduced into the said container which can be removably accommodated in the housing, character-

ized in that the insertion means comprise at least one pair of driven conveyor rollers which delimit a passage slot, and in that at least one of the conveyor rollers of the at least one pair is provided with at least one helical rib or profile which extends over the outer surface of the roller. A conveyor roller with a helical rib or profile of this nature extending over the outer surface of the roller has the advantage that the paper money guided through the passage slot during rotation of the conveyor rollers is stretched in a direction perpendicular to the passage direction of the paper money, i.e. in a direction parallel to the axis of rotation of the conveyor rollers.

In order to improve the stretching in the transverse direction of the paper money guided through, in this case it is advantageous according to the invention if the at least one helical rib or profile extends in opposite directions, preferably from the centre of the passage slot, with opposing screw threads, and if these oppositely directed screw threads evolve in such a way with respect to the direction of rotation of the respective roller that paper money guided through the passage slot is stretched in the direction of the axis of rotation of the rollers as it passes through the slot. This ensures that the paper money is stretched well in a direction transverse to the passage direction, without the paper money itself being moved in a direction transverse to the passage direction. This is because the helical ribs or profiles which evolve in opposite directions exert on the paper money guided through the passage slot forces which act in opposite directions during the stretching.

Stretching of the paper money in the passage direction can be realized in a very advantageous manner according to the invention if the insertion means comprise at least two pairs of driven conveyor rollers, each pair delimiting a passage slot, and if the peripheral velocity, when considered in the transport direction, of the first pair of conveyor rollers is lower than the peripheral velocity of the second pair of conveyor rollers, and if the peripheral velocity of the second pair of conveyor rollers is in turn lower than the peripheral velocity of any third pair of conveyor rollers, etc.

The stretching mechanism according to the invention for stretching paper money in the transverse direction and/or stretching the paper money in the longitudinal direction can be employed very advantageously according to the invention in the assembly in which the container is an essentially closed bag which is preferably provided with an insertion slot which can be closed by sealing. This is because it is important with bags of this kind, in particular in order to facilitate final processing at the bank, for the paper money stored in the bags to be presented in a neat stack. When using containers in the form of bags of this kind, it is difficult to provide an inexpensive stretching mechanism in the bag itself or to provide other means in the bag which assist with neat stacking of the paper money. It is therefore extremely important that well stretched, i.e. in particular flattened, paper money be presented to the bag.

The invention furthermore also relates to a container which is intended or suitable for an assembly according to the invention.

Moreover, the invention also relates to a housing which is intended or suitable for an assembly according to the invention.

The present invention will be explained in more detail in the following text with reference to an exemplary embodiment which is depicted diagrammatically in the drawing, in which:

Figure 1 shows a diagrammatic cross-sectional view of a first example of an assembly according to the invention;

Figure 2 shows a diagrammatic cross-sectional view of the assembly from Figure 1, in which a number of components from Figure 1, and also the container bag, have been omitted, and in which an unlocking mechanism which can advantageously be used for the lid of the housing is illustrated diagrammatically;

Figure 3 shows a diagrammatic, perspective view of two pairs of conveyor rollers, according to the invention, which are fitted in such a manner that they ensure that the paper money is stretched in its transverse and longitudinal direction;

Figure 4 shows a diagrammatic view of a second example of an assembly according to the invention, in which the housing itself is shown broken away; and

Figure 5 shows a diagrammatic perspective illustration of a detail from Figure 4.

The first example of an assembly according to the invention comprises, as the most important primary components, a housing 1 and a sealable plastic bag which can be accommodated therein. A sealable plastic is understood in this context to refer to a plastic which can be fixed together by welding. The sealable bag is denoted by the reference numeral 2.

With regard to its casing part, the housing 1 comprises a receptacle 3 with a lid 5 which can be pivoted about hinge 4. Bag-attachment means, such as a number of pins, preferably at least four pins 6, are attached to the lid 5, which bag-attachment means can be inserted through loops 7 formed on the outside of the bag 2, in order to be able to clamp this bag 2 between the pins 6, which are disposed in a square or rectangular pattern. The bag 2 may in this case be made from a relatively flexible plastic, for example a film-like plastic, which can be held in a block-shaped, clamped position by the pins 6. The dimensions of the bottom 8 of the block-shaped bag 2 in the clamped position are selected in such a manner that all types of paper money which are to be accommodated in the bag 2 can lie flat against this bottom 8, in order to ensure that all these



types of paper money can be stacked up together in the bag in a stacked position, as indicated diagrammatically by 9.

The sealable bag 2 is preferably of transparent design, so that the contents of the bag can be seen from the outside. Furthermore, the bag 2 is provided on one vertical side, in the region of the top surface 10, with a mouthpiece 11. This mouthpiece 11 essentially comprises two horizontal strip parts 13 which extend parallel to one another and delimit the inlet slot 12 to the bag 2. The length of the inlet slot 12 is dimensioned in such a manner that the types of paper money to be stored in the bag 2 can be guided through this slot in the stretched form. In order to ensure that the mouthpiece 11 of the bag 2 is kept open in order to allow through paper money, a top lip 14 and a bottom lip 15, arranged at a distance from the top lip, are provided, which lips 14 and 15 project into the mouthpiece 11 and hold its strip parts 13 spread apart. The bottom lip 15 is in this case designed to be resiliently yielding, so that it is possible to press the strip parts 13 of the mouthpiece 11 together. In order to facilitate arranging the bag 2 in the housing, the lips 14 and 15 are arranged on a support 16 which is attached to the lid 5. This is because this makes it possible, when the lid 5 is placed in, for example, a vertical position, to remove an old bag 2 from the pins 6 and to clamp a new bag 2 between the pins 6 and to slide the mouthpiece 11 of this new bag over the lips 14 and 15, and then to fold the lid 5 closed, into the horizontal position, as shown in Figure 1.

In order to be able to insert paper money from outside the housing 1 and to be able to deliver it into the bag 2, insertion means are provided. These insertion means comprise an essentially U-shaped insertion chute 17, in which a piece of paper money which is in a flat position can be placed. This chute 17 serves as guide means for leading the paper money to the first pair of two pairs of conveyor rollers belonging to the insertion means. The chute 17 opens out in the vicinity of a passage slot which is delimited between the first pair of conveyor rollers 18, 19. A first pair of conveyor rollers 18, 19 is driven by means of a motor 21 and a belt 22 so as to pull a piece of paper money presented to this first pair of conveyor rollers 18, 19 through the passage slot and then to guide this piece of paper money onwards, via guide 20, to the passage slot between the next pair of conveyor rollers 23 and 24. These conveyor rollers 23 and 24 are also driven by the motor 21, via the same belt 22, so as to pull the piece of paper money presented to them through the passage slot and to deliver it, via guide 25, into the bag 2 in accordance with arrow 26.

In order to improve the stacking in the bag 2 to form a neat stack of paper money, it is advantageous according to the invention if the pairs of conveyor rollers 18, 19 and 23, 24 are provided with a stretching mechanism. In order to stretch the paper money in a direction transverse to the passage direction 26, the top conveyor roll-

ers of each pair of conveyor rollers, i.e. the rollers 18 and 23, are each provided with a helical rib or profile 27 which extends over the outer surface of the roller. As can be seen from Figure 3, the profiles 27 evolve helically, in opposite directions, from approximately the centre 28 of the rollers 18 and 23, in such a manner that a piece of paper money conveyed between the pairs of conveyor rollers is stretched in the directions of the double arrow D, parallel to the axis of rotation of the conveyor rollers 18, 19, 23 and 24. In order to ensure that the paper money is stretched in the passage direction in accordance with arrow 26, the conveyor rollers 23 and 24 are driven in such a manner that their peripheral velocity is greater than the peripheral velocity of the rollers 18 and 19. The effect of this is that the rollers 23 and 24 seek to pass through the rollers 23 and 24 more quickly than through the rollers 18 and 19, so that the paper money is stretched in its passage direction 26. A drive of this nature is relatively simple to realize by dimensioning the transmission wheels 29 and 30, via which the belt 22 drives the rollers 18, 19, 23 and 24, in such a manner that the peripheral diameter of the transmission wheels 29 is smaller than the peripheral diameter of the wheels 30.

The housing of the assembly according to the invention is furthermore provided with sealing means, in order to be able to seal a sealable plastic bag 2 which is accommodated in the housing. The sealing means provided for this purpose comprise an anvil 31, which is attached to the lid 5, and a pressure-exerting member 32, which can move up and down in the vertical direction. As indicated by dot-dashed lines, this pressure-exerting member 32 can be moved upwards as far as against the anvil 31. This upwards movement of the pressure-exerting member 32 can be realized by means of an eccentric which can rotate about pin 35 and can be actuated by means of a handle 34 arranged on the outside of the housing 1. It will be clear that in this way the bag 2 can be sealed while this bag 2 is situated in the housing. In order to ensure that a bag 2 can only be removed from the housing after it has been sealed (so that fraud after removing the bag 2 from the housing is only then possible by damaging the bag 2), there are numerous ways to provide for locking of the lid 5, which locking is only released after the bag 2 has been sealed.

In order to be able to seal the bag 2, it will be clear that the pressure-exerting member 32 and/or the anvil 31 can be heated in a known manner.

Locking of this nature can be achieved, for example, in a simple manner as illustrated diagrammatically in Figure 2. A disk 36 is attached to the pin 35, immovably with respect to the eccentric 33 and the handle 34, which disk 36 is provided with a circular slot 37. A pin 39 which is attached to the support 16, which also bears the lips 14 and 15, protrudes into this slot 37. As will be clear from Figure 2, if the handle 34 is rotated in the direction of arrow 38, the pressure-exerting member 32 will be moved upwards by the eccentric 37 as far as

against the anvil 31, in order to seal a bag which is then clamped between the pressure-exerting member 32 and anvil 31, or at least to seal the mouthpiece 11 of this bag. If the handle 34 is then moved further in the direction of arrow 38, the eccentric 33 will allow the pressure-exerting member 32 to fall downwards again and the pin 39 will ultimately be released via the open end 40 of the slot 37, after which the lid 5 can be swung open around hinge 4, in the direction of arrow 41. The lid 5 may optionally also be locked by means of a lock 50 which can be actuated using a key. By means of a key-actuated lock of this kind, which can equally well be replaced by a code or some other form of lock, it is possible to ensure that an unauthorized person will not be able to gain access to the housing 1.

Figure 4 shows a second example of an assembly according to the invention, which with regard to the insertion means which open out onto the inlet slot of the bag and have driven conveyor rollers, and the sealing means comprising a pressure-exerting member and an anvil, is essentially identical to the exemplary embodiment depicted in Figures 1-3. For this reason, these components are in that respect only sketched in Figures 4 and 5 and will be described here only insofar as they differ from the exemplary embodiment in accordance with Figures 1-3.

A significant difference between the embodiment in accordance with Figures 1-3 and that in accordance with Figures 4 and 5 is that in the embodiment in accordance with Figures 4 and 5 the housing 100 comprises a box 101, which is only partially illustrated in Figure 4, with a drawer 102 which can be slid into and out of the box. In Figure 4, the drawer 102 is illustrated in its position in which it has been slid out of the box 101, in which position the drawer is accessible for the purpose of attaching or removing a bag 103. The drawer 102 can be slid into and out of the box/casing 101 in the direction of arrow 105. The drawer 102 comprises a wall part 106 or panel part 106, which in the pushed-in position closes off the case 101 over one side wall, and a base which is provided with rails 107 on either side. The wall part 106 is provided with a key contact 108 and a signal lamp 109. A key can be inserted into the key contact 108, and on turning this key a switch is activated, which in turn activates an electrical/electronic control unit. This electrical/electronic control unit is designed in such a way that it first moves the pressure-exerting member 132 upwards towards the anvil 131, in order to seal the bag present in the housing 100, and then after a certain time, which is sufficient to bring about the heat seal and is necessary for this seal to harden, has elapsed it releases the locking of the wall part 106 with respect to the box/casing 101 and optionally causes the drawer 102 to slide slightly out of the case 101, after which the drawer 102 can be slid out of the case by the operator, so that the bag 103, the inlet slot of which has already been sealed, can be removed from the drawer 102. In the embodiment sketched in Figure 4, the insertion

means and the sealing means, which are not illustrated in more detail, are arranged in or on the drawer 102. This has the advantage that these components are relatively easily accessible for maintenance purposes.

The signalling lamp 109 can emit a specific signal in accordance with the state of, for example, the sealing, the filling level of the bag, the locking of the wall part 106 to the case 101 etc., for example by flashing at a certain frequency or lighting up in different colours. If desired, a plurality of signal lamps 109 may be provided. The insertion opening for paper money will be arranged in the sloping part 110 on wall part 106, but cannot be seen in Figure 4.

As shown in Figure 4, an L-shaped member 133 is attached to the pressure-exerting member 132, which can be moved upwards for sealing purposes, which L-shaped member forms a lifting mechanism, by means of which, during sealing of the inlet slot, that part of the bottom of the bag 103 which is situated beneath the inlet slot is raised. This is because L-shaped member 133 moves upwards together with the pressure-exerting member 132 and in the process raises the bottom of the bag 103 slightly, as will be clear. This has the particular advantage that the inlet slot of the bag 103 which in accordance with the embodiment shown in Figure 1 is designed as a mouthpiece 140, remains in position between the pressure-exerting member 132 and anvil 131 when the pressure-exerting member 132 is moved upwards, and hence does not slide out from between these components, preferably scarcely moving between them. Consequently, the location where the seal is to be formed is relatively accurately defined with respect to the mouthpiece, thus considerably increasing the reliability of the seal.

Figure 5 very diagrammatically shows a bag 103, which is indicated by dot-dashed lines and is clamped on a clamping frame 120. As can be seen, in the clamped position the bag 103 is essentially block-shaped. The clamping frame 120 comprises a base plate 121, which can be placed beneath the bottom of the bag 103 in order to support the bottom of the bag 103. In order to fix/position the bag 103 with respect to the base plate 121, the bag 103 is provided on its underside with an extra layer of plastic situated beneath the bottom layer of the bag 103 itself, which extra layer, together with the bottom layer of the bag itself, encloses a passage, into which the base plate 121 can be inserted in the direction in accordance with arrow 122. At the top of the bag 103, the latter is provided along its sides with further integrally moulded plastic parts 123, which are more or less in the form of a sleeve, in order to enclose a passage channel 124, into which clamping arms 125 of the clamping frame 120 can be inserted, likewise in accordance with the direction of arrow 122. In this case, the free ends of the arms 125 point away from one another, so that in the position in which a bag 103 is clamped they are pressed towards one another slightly with preloading by the sleeves 123. At those



ends of the arms 125 which are remote from the free ends 127, clamping lips 126 are provided, which in a corresponding manner, in the position in which a bag 103 is clamped, are pressed towards one another slightly with preloading. It will be clear that the clamping frame 120 is thus able to clamp the bag 103 to form a block. In order to be able to fix a bag 103 to the clamping frame 120, pins are provided such as the pins 128 and 129 on lip 126 and arm 125, respectively. In the position in which a bag 103 is clamped, these pins can then be inserted through holes in the sleeve 123. The bag 103 can be taken out of the drawer 102 together with clamping frame 120 and all, after which a filled and sealed bag 103 can be removed from the clamping frame 120 so that a new, unfilled and unsealed bag 103 can then be clamped to the clamping frame 120, after which the unit comprising clamping frame 120 and new bag 103 clamped to the latter can be put back in the drawer 102. During this operation of placing clamping frame 120 with clamped bag 103 in the drawer 102, the mouthpiece 140 of the bag 103 is pushed over lips (not shown) such as the lips 15 and 14 from Figure 1.

Figure 5 furthermore shows the movable pressure-exerting member 132, the lifting mechanism 133 and part of a threaded spindle 134, by means of which pressure-exerting member 132 can be moved up and down in the vertical direction for sealing purposes, by means of drive means (not shown). The unit comprising pressure-exerting member 132, L-shaped lifting member 133 and spindle 134 is preferably fixed to the drawer 102 and will thus not be removed from the drawer 102 together with the clamping frame 120 and the bag 103 clamped therein. As is clear in particular from Figure 5, the lifting member 133 will engage under the base plate 121, thus ensuring that the bag 103 is lifted reliably when sealing the mouthpiece 140.

Not shown in Figures 4 and 5 is a shaking mechanism which can be used to jolt a bag clamped in the assembly so as to vibrate it. A shaking mechanism of this kind is easy to realize by mounting on the drawer 102 one or more rollers or wheels, which are mounted eccentrically, can be driven in rotation and can act, for example, on the underside of the base plate 121. In this case, this shaking mechanism may be driven permanently like the insertion means but it is also conceivable for the shaking mechanism, and also the insertion means, to be driven only when a sensor detects paper money being presented to the insertion opening in sloping face 110. An electronic or electrical control unit can ensure that the insertion means and/or the shaking mechanism continue to be driven for a certain time before being switched off again.

## Claims

1. Assembly for storing paper money in a container, the assembly comprising a container and a housing in which the container can be removably accommo-

dated, the housing being provided with insertion means for inserting paper money into the housing, and the insertion means opening out onto inlet means, via which the paper money can be introduced into the said container which can be removably accommodated in the housing, characterized in that the container is an essentially closed bag, in that the inlet means comprise an inlet slot formed in the bag, and in that the bag is provided, in the region of the inlet slot, with a sealable plastic, in such a manner that the bag can be closed by sealing.

2. Assembly according to Claim 1, characterized in that the housing is provided with sealing means for sealing the inlet slot of the bag.
3. Assembly according to Claim 2, characterized in that the sealing means are arranged in the housing, in the region of the inlet means, in such a manner that the bag can be sealed in the position in which it is accommodated in the housing.
4. Assembly according to one of Claims 2-3, characterized in that the sealing means comprise an anvil which is fixed to the housing and a pressure-exerting member which is movable with respect to the housing and can be pressed against the anvil, in which case the anvil and/or the pressure-exerting member are or is heatable.
5. Assembly according to one of Claims 2-4, characterized in that the housing is formed by an essentially closed box, to which access can be gained via a lid in order to replace a bag, it being possible to lock the lid by means of locking means on the box, it being possible to actuate the sealing means from outside the box, which sealing means are actively connected to the locking means in such a manner that a bag accommodated in the box must first be sealed before the lid can be unlocked.
6. Assembly according to Claim 5, characterized in that the lid is a drawer which can be slid into and out of the box, and in that the bag can be placed on this drawer in an exchangeable manner, so that at least when the drawer has been slid in, the insertion means open out onto the inlet means and so that when the drawer has been slid out, the bag can be removed from the drawer or placed in the drawer.
7. Assembly according to one of the preceding claims, characterized in that the bag is essentially block-shaped and in that the assembly comprises a clamping frame, comprising clamping arms which can be placed in passages formed on the outside of the bag, the passages and clamping arms being designed so as to be able to clamp the bag in the



block-shaped state.

8. Assembly according to Claims 6 and 7, characterized in that the clamping frame is arranged in the drawer, or can be placed in the drawer such that it can be removed, bag and all. 5
9. Assembly according to Claims 7 or 8, characterized in that the clamping frame comprises, in the position in which a bag is clamped to the frame, a base plate which supports the bottom of the said bag on the underside and is preferably placed in one or more of the said passages. 10
10. Assembly according to one of the preceding Claims 2-9, preferably according to Claim 9, characterized in that the assembly comprises a bag-bottom-lifting mechanism, which interacts with the sealing means and is designed in such a manner that it raises the bag bottom when sealing the inlet slot. 15 20
11. Assembly according to one of the preceding Claims 2-10, preferably according to Claim 9, characterized in that the assembly is provided with a shaking mechanism which is designed in such a way that, in the position in which the bag is accommodated in the housing, it is able to jolt this bag so as to vibrate it. 25
12. Assembly according to one of the preceding claims, characterized in that the bag is essentially block-shaped, in that the passage plane of the inlet slot extends essentially in the vertical plane, and preferably in that the inlet slot is arranged just below the top of the block-shaped bag. 30 35
13. Assembly according to one of the preceding claims, characterized in that the inlet means furthermore comprise lips which are placed at a distance apart and opposite one another, can be positioned in the inlet slot of the bag and delimit a slot-like passage for paper money. 40
14. Assembly according to Claim 13, preferably in combination with at least Claim 4, characterized in that at least one of the lips is arranged movably, or rotatably or in a resiliently yielding manner with respect to the housing, in such a manner that this lip allows the inlet slot to be pressed closed when sealing the bag. 45 50
15. Assembly according to one of the preceding claims, characterized in that the bag is provided with a projecting mouthpiece made of sealable plastic, which mouthpiece delimits the inlet slot and preferably extends essentially horizontally. 55
16. Assembly according to one of the preceding claims, characterized in that essentially the entire bag is produced from a, preferably transparent, plastic, and in that the bag, in the position in which it is accommodated in the housing, has an essentially block-like shape with a bottom surface which is dimensioned in such a manner that the paper money can be stored in the bag as a stack extending from the bottom upwards.
17. Assembly for storing paper money in a container, preferably according to one of the preceding claims, the assembly comprising a container and a housing in which the container can be removably accommodated, the housing being provided with insertion means for inserting paper money into the housing, and the insertion means opening out onto inlet means, via which the paper money can be introduced into the said container which can be removably accommodated in the housing, characterized in that the insertion means comprise at least one pair of driven conveyor rollers which delimit a passage slot, and in that at least one of the conveyor rollers of the at least one pair is provided with at least one helical rib or profile which extends over the outer surface of the roller.
18. Assembly according to Claim 17, characterized in that the at least one helical rib or profile extends in opposite directions, preferably from the centre of the passage slot, with opposing screw threads, and in that these oppositely directed screw threads evolve in such a way with respect to the direction of rotation of the respective roller that paper money guided through the passage slot is stretched in the direction of the axis of rotation of the rollers as it passes through the slot.
19. Assembly according to Claim 17 or 18, characterized in that the insertion means comprise at least two pairs of driven conveyor rollers, each pair delimiting a passage slot, and in that the peripheral velocity, when considered in the transport direction, of the first pair of conveyor rollers is lower than the peripheral velocity of the second pair of conveyor rollers.
20. Container intended for an assembly according to one of Claims 1-19.
21. Housing intended for an assembly according to one of Claims 1-19.

fig-1

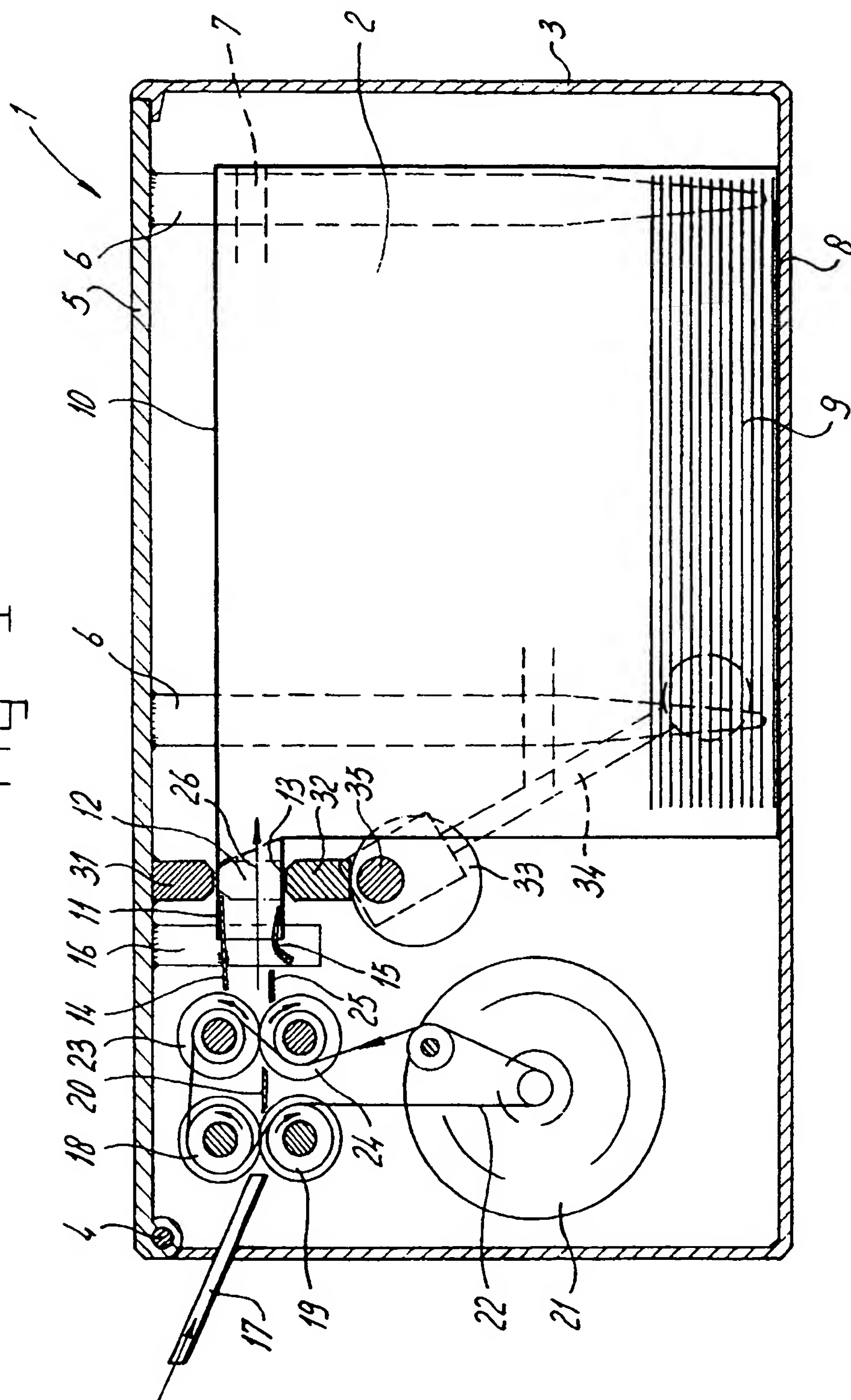




fig-2

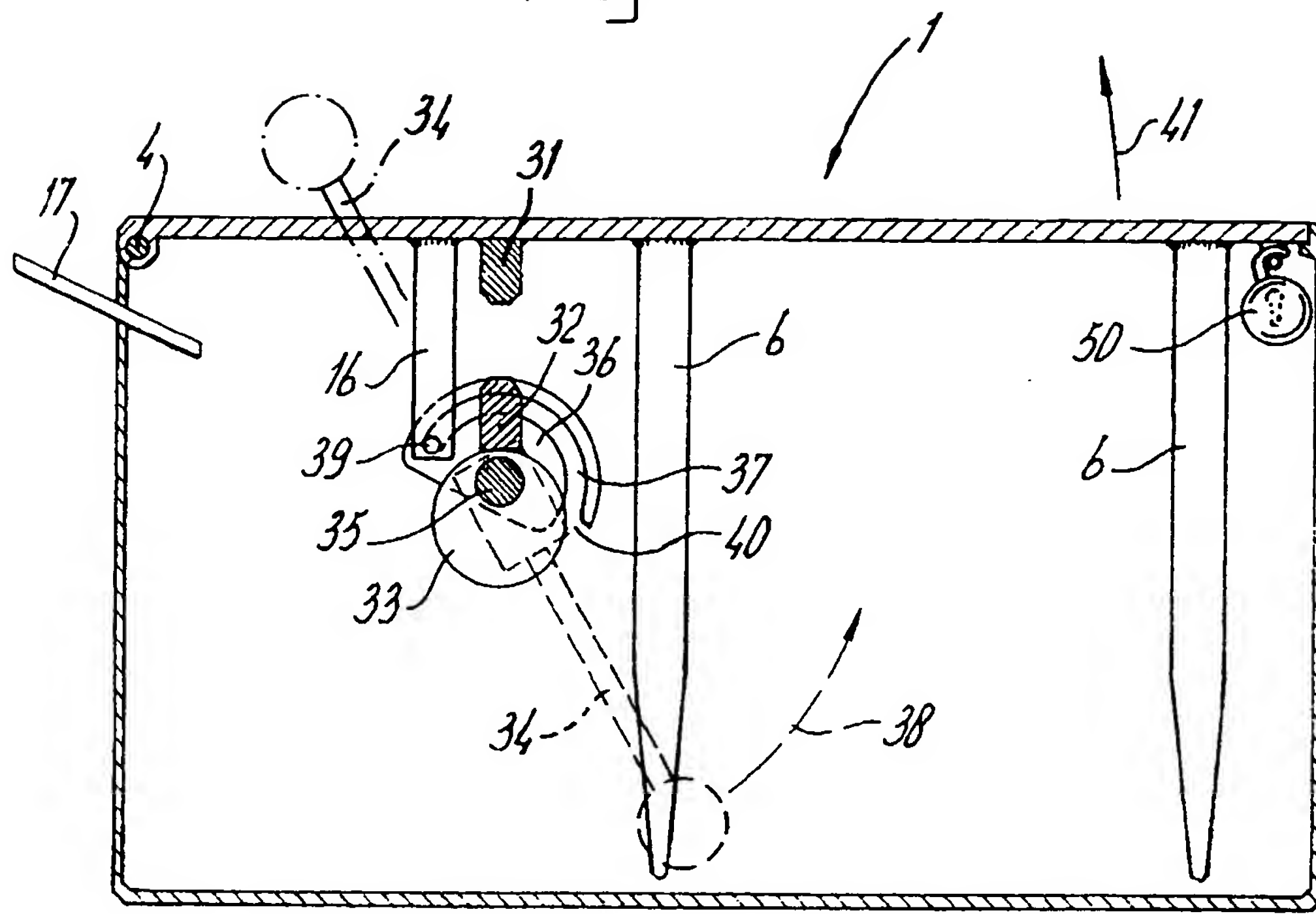
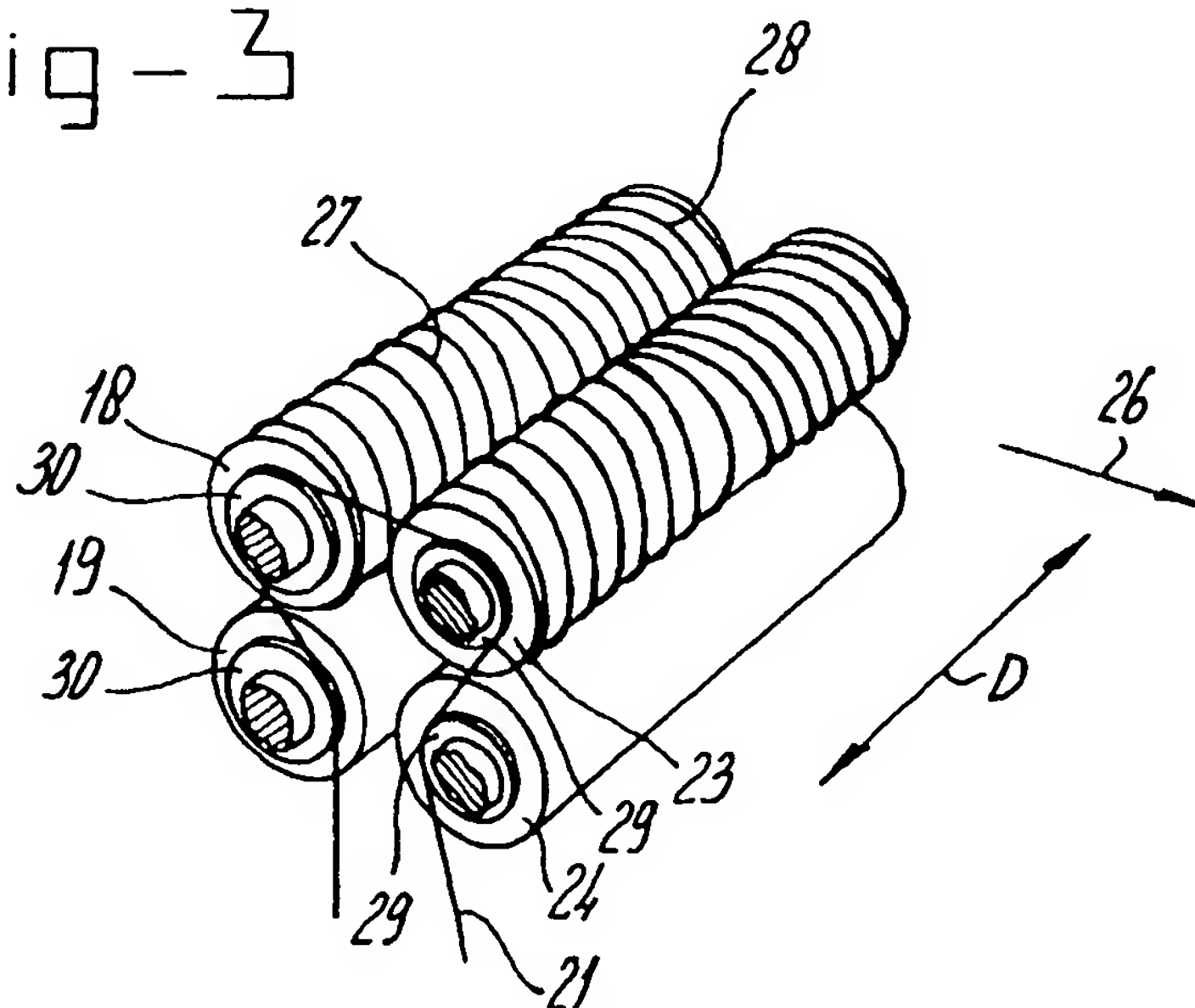
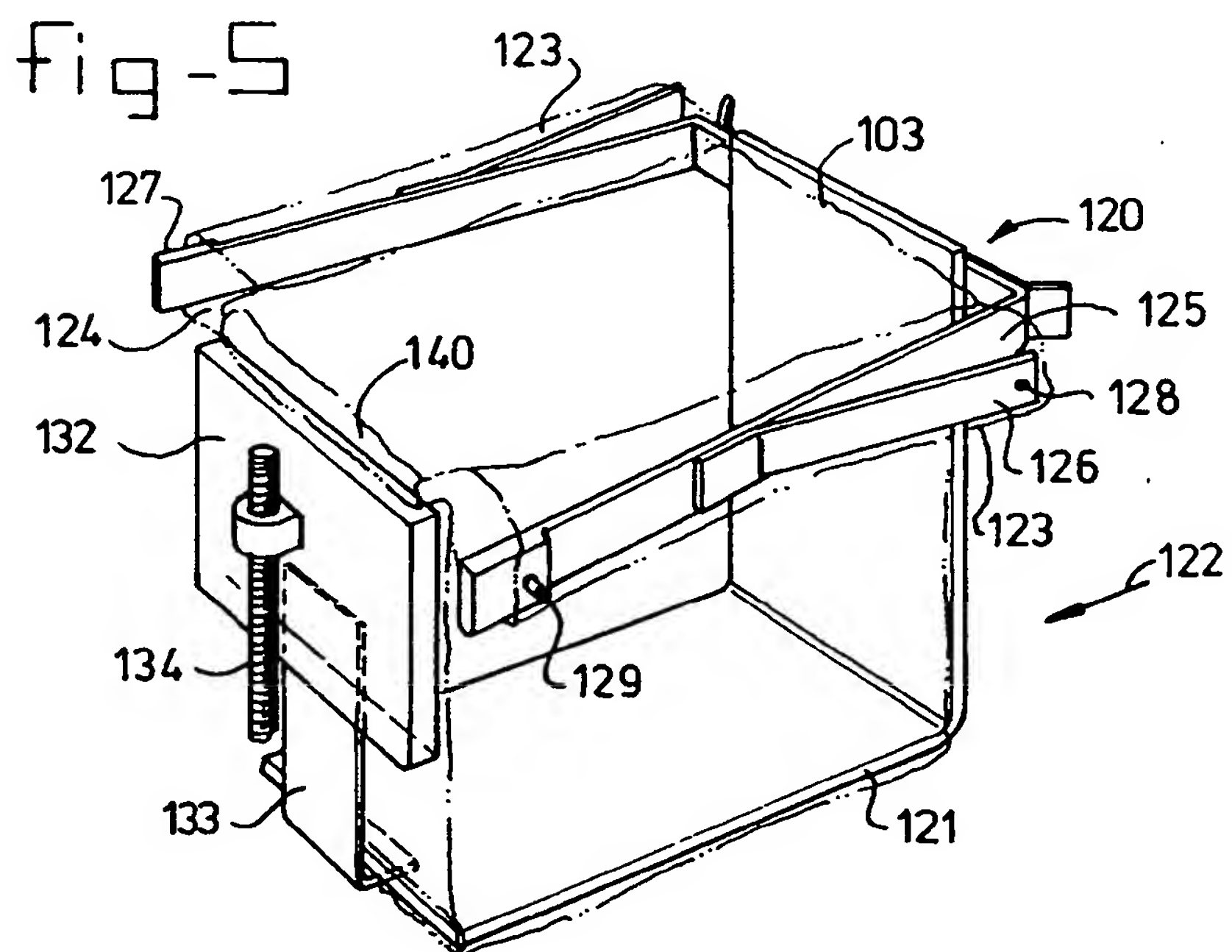
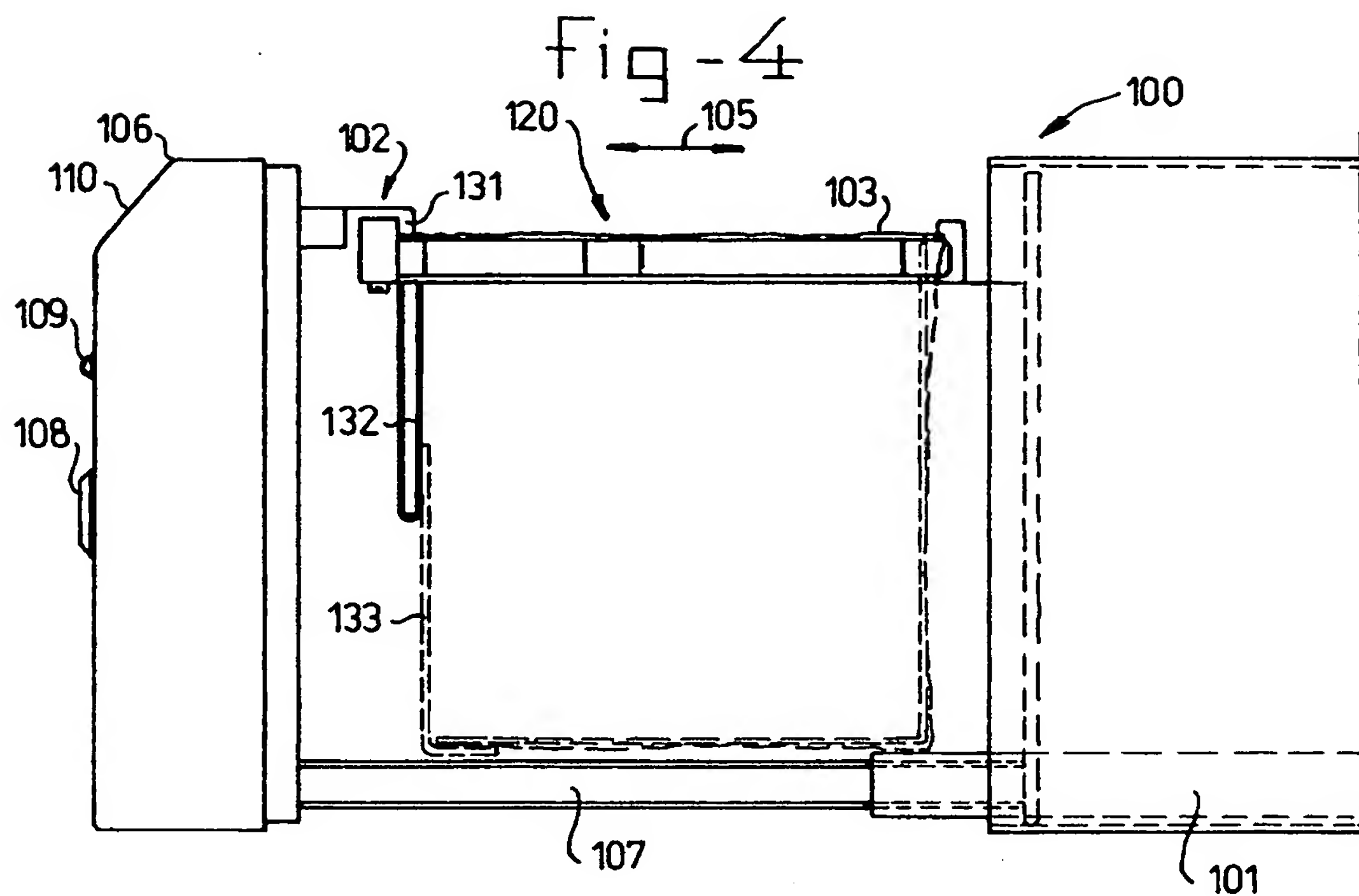


fig-3









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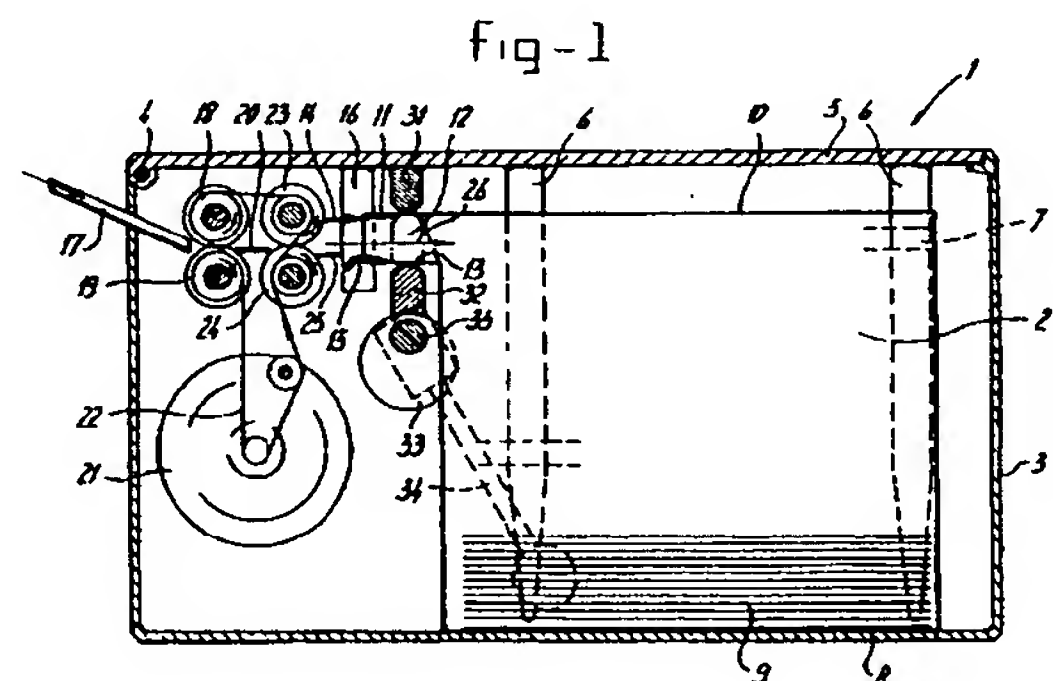
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(54) **Assembly for storing paper money in a container, as well as container and housing for a container of this kind**

(57) The invention relates to an assembly for storing paper money in a container. The assembly comprises a container (2) and a housing (1) in which the container (2) can be removably accommodated, the housing is provided with insertion means (17) for inserting paper money into the housing, and the insertion means open out onto inlet means (12), via which paper money can be introduced into the said container (2). The container is an essentially closed bag. The inlet means comprise an inlet slot (12) formed in the said bag and the bag is provided, in the region of the inlet slot, with a sealable plastic, in such a manner that the bag can be closed by sealing. Preferably, the housing (1) itself is provided with sealing means (31,32) for sealing the inlet slot (12) of the bag. Furthermore, the housing is preferably provided with a flap (5) for replacing the bag, which flap can be locked by means of locking means (16,36,37,39), which are actively connected to the means for actuating the heat-sealing (33-35) in such a manner that the flap can only be opened after the bag has been sealed.



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# EUROPEAN SEARCH REPORT

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EP 97 20 4138

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,Y	GB 2 218 150 A (SARFIELD) 8 November 1989 * page 3 - page 7 *	1,13-16	E05G1/00 B65D33/34 B65H23/025
D,Y	FR 2 523 080 A (POMMIER ET AL) 16 September 1983 * page 1, paragraph 1 - paragraph 2 *	1,13-16	
D,A	EP 0 033 926 A (CONFORTI) 19 August 1981 * abstract *	1	
D,Y	WO 94 17274 A (HEMA ET AL) 4 August 1994 * abstract * * page 9, line 18 - line 28 *	17,18	
Y	EP 0 333 675 A (CONTI) 20 September 1989 * column 1, paragraph 1 * * column 2, line 15 - line 56; figures *	17,18	
A	US 5 188 273 A (SCHMOOCK) 23 February 1993 * abstract *	17,18	
A	EP 0 081 328 A (ORPEN) 15 June 1983 * abstract *	17-19	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US 4 586 224 A (SARTOR ET AL) 6 May 1986 * abstract *	17	E05G G07F G07D B65D B65H
D,A	GB 2 236 143 A (TOD) 27 March 1991 * page 5 - page 6, paragraph 1; figures *	17	
A	EP 0 328 480 A (CLOSERIE) 16 August 1989 * column 1, line 1 - line 47; figures *	17	
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>5 August 1998</b>	Examiner <b>Van Kessel, J</b>
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



European Patent  
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**LACK OF UNITY OF INVENTION  
SHEET B**

Application Number  
EP 97 20 4138

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-16, (17-21)\*

Sealable container for storing paper money.

2. Claims: (17-19) \*\*

Insertion means for paper money.